Confidence Analytics

14797 NE 95th ST
Redmond, WA 98052
(206) 743-8843
info@conflabs.com

Pesticide Statistics

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Introduction

The Washington State Liquor and Cannabis Board (WSLCB) determines and codifies the Action Limits for pesticide residues on finished cannabis products. When any single pesticide compound is detected above the limit in a cannabis product by a laboratory accredited by the WSLCB, it is considered a "fail" and the corresponding cannabis lot or batch may be subject to further scrutiny including recall and destruction of product.

What follows is a brief summary of statistics from Confidence Analytics, a certified cannabis testing laboratory located in Redmond, WA. Confidence Analytics is one of three laboratories accredited for pesticide testing by the WSLCB.

Over 1,000 samples of Cannabis Flower, Cannabis Trim, and Cannabis Concentrate were analyzed between June of 2016 and October of 2018. These samples were voluntarily submitted to the laboratory by licensed cannabis producers and processors ("licensees"). There is no legal requirement for this testing in Washington state, except in rare cases where the licensee is seeking "endorsement" by the Washington State Department of Health. More on that later.

For further context, see this link, which describes a presentation by Confidence Analytics in November of 2017. The data presented in this document are intended to follow up on and supplement the data from that presentation, over one year ago.

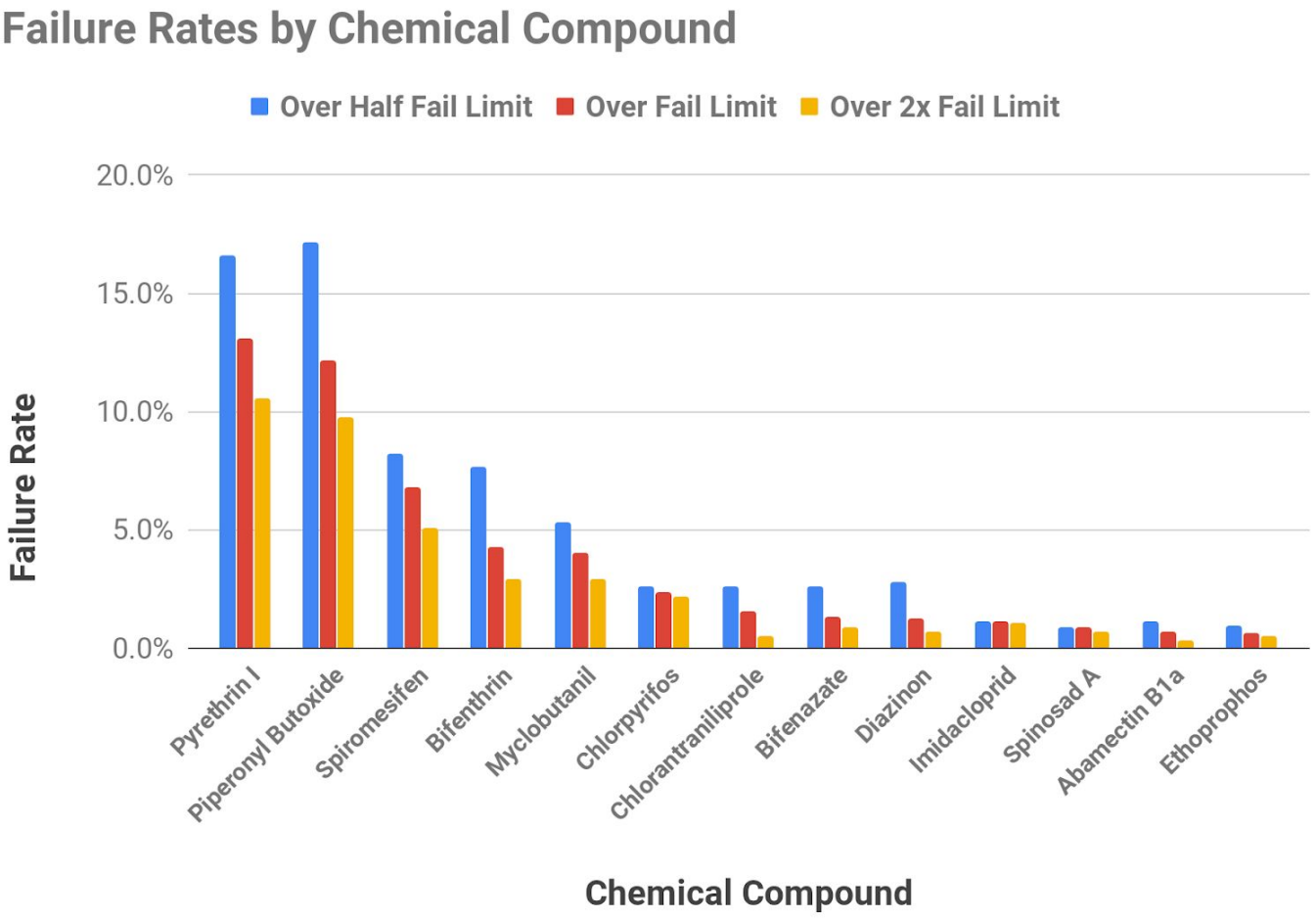
The data are anonymized to protect the identities of the licensees.

For further information, contact Nick Mosely (nick@conflabs.com).

Original Presentation:

https://docs.google.com/document/d/1Y3rbHB4NOjcqytdHhCByKa8mBNZ8v-WzF1HCAhhmkv0

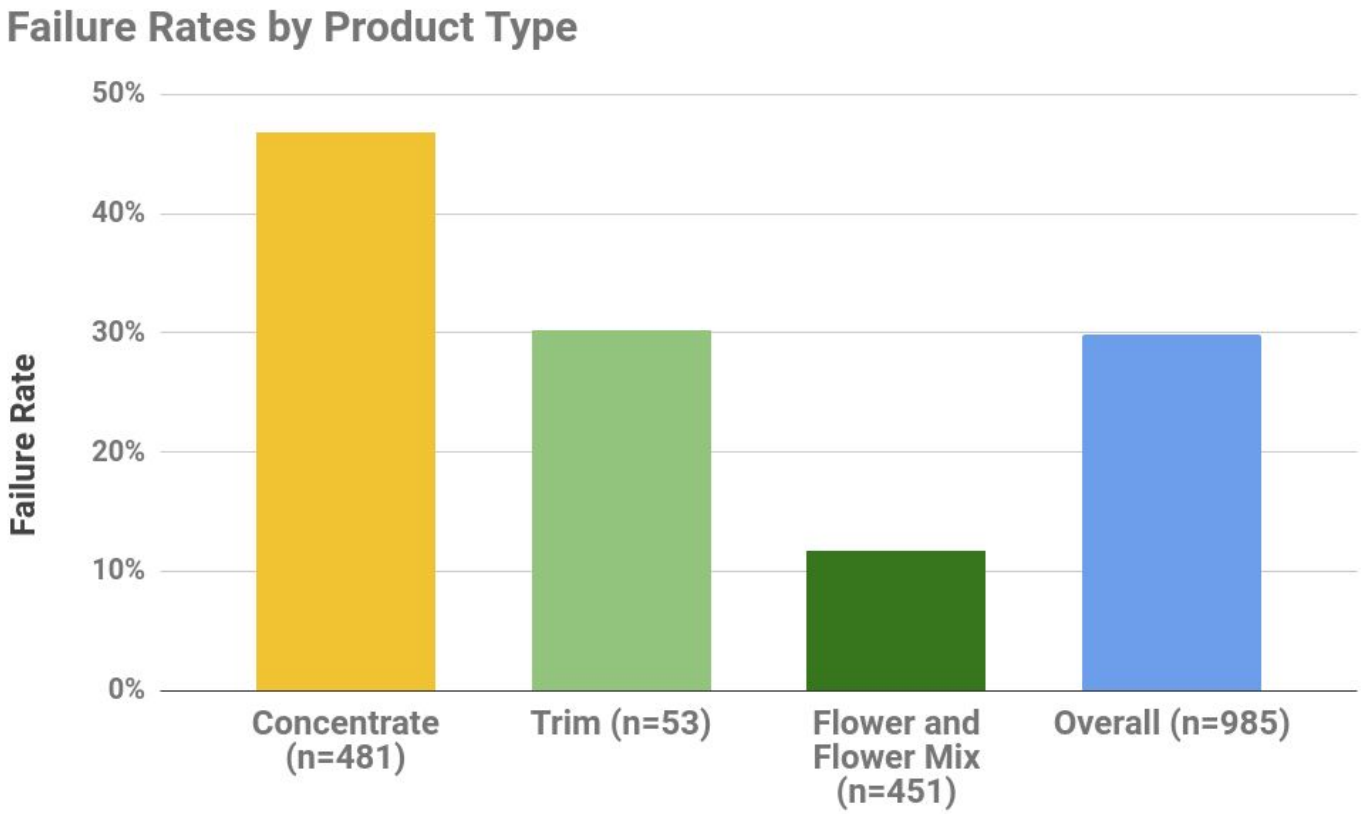
Failure Rates by Chemical Compound



Over 50 compounds are analyzed by Confidence Analytics in every pesticide test of a cannabis product. The quantitative analysis conditions span the “failure limit” for each compound, often by several fold. The chart above describes the failure rates for the 13 compounds for which failure was most common. The fail limits for Pyrethrin I and Piperonyl Butoxide apply only to Cannabis Concentrate, not Cannabis Flower or Cannabis Trim; therefore, the rates listed for those two compounds represent the rates in Cannabis Concentrates only. The other compound statistics represent all cannabis products tested.

The Washington State Department of Health (DOH) requires screening for 13 compounds in order for a cannabis product to meet “endorsement” standards. However, the 13 compounds required for testing by the DOH are not the same 13 compounds that Confidence Analytics sees failures for the most, as listed above. In other words: if Confidence Analytics were only testing for the 13 compounds required by the DOH, then some of the compounds on the chart above would not have been tested and therefore would not have been detected.

Failure Rates by Product Type

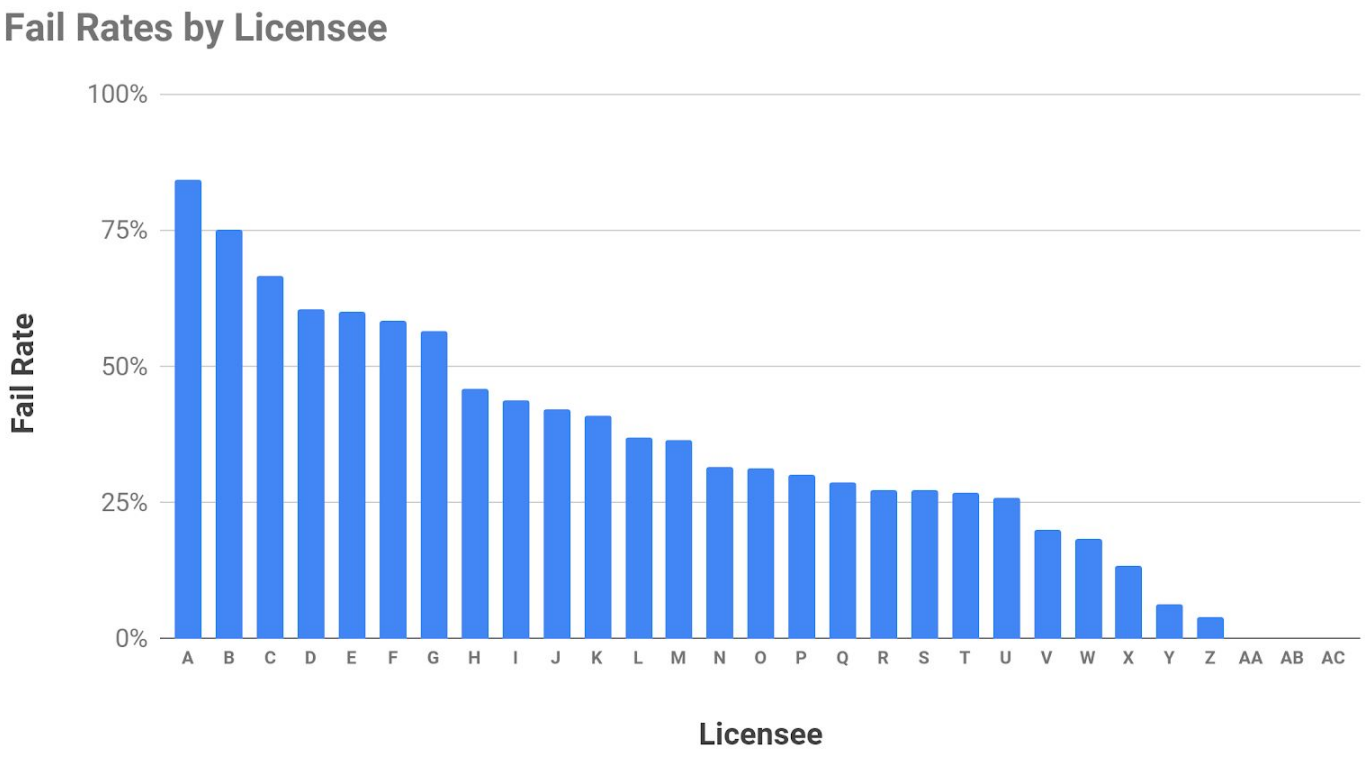


Different product types fail at different rates. Flower fails the least of all the inhalable products. Trim/Mixed fails more. Concentrates fail the most. This makes sense given that Trim comes from a part of the plant more externally exposed/ existing on the plant longer. Concentrates are often made from trim, and the act of concentrating cannabinoids can concentrate some pesticides, too. In this way, our observations match our expectations.

Different methods of extraction also have different failure rates, probably for many reasons. In this data set, butane extracts, CO2 extracts, and distillates all have roughly the same failure rate, in the mid-40%. Ethanol extracts have a lower failure rate (23%; n=52) and our lab has never seen a failure for a THC-A Crystalline Isolate (n=13). These differences could be due to the nature of the extraction process, or could be due to the sourcing of raw material by different producers. More on that in the next section.

Very few samples of non-solvent based extract have been submitted to Confidence Analytics for pesticide testing, so we lack sufficient data to comment on the failure rates of rosin, kief, dry sift, bubble hash, and other forms of concentrate made by physical or mechanical means.

Failure Rates by Licensee



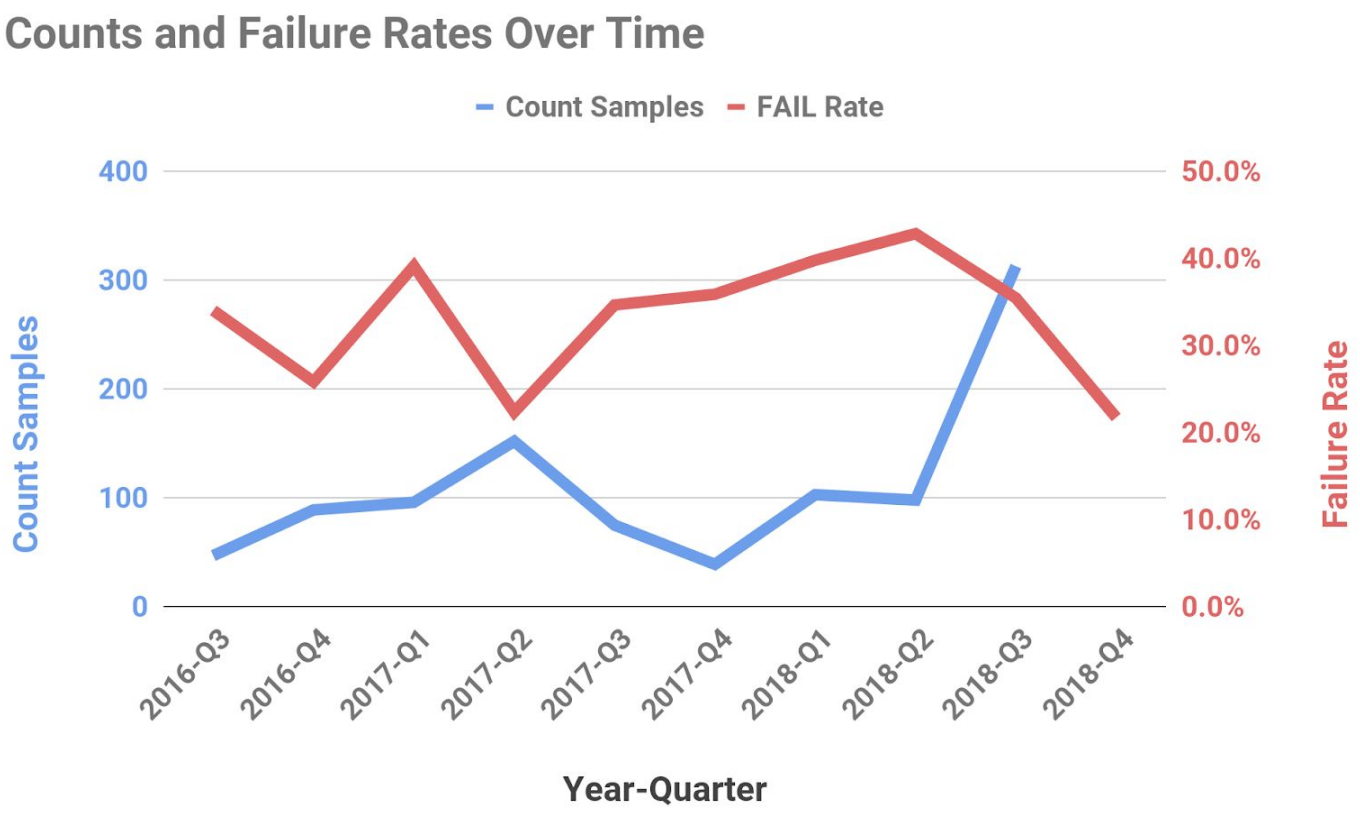
Different licensees have different failure rates. The chart above describes the failure rates for the 29 licensees who have each submitted at least 10 samples to Confidence Analytics for pesticide testing. Some licensees experience a very high failure rate, while other licensees submit dozens of samples and never experience a single failure.

Importantly, the motivation for submitting samples to the laboratory for pesticide testing is different between licensees. Some licensees submit samples to demonstrate the cleanliness of the products they cultivate and/or manufacture, others submit samples as a means of vetting their suppliers, while others submit samples of their competitor's products. In that regard, many of the samples submitted to the laboratory were not created by the businesses submitting them, and the origin of the samples is not always known to the laboratory.

All of the last 5 licensees in the chart above (Y, Z, AA, AB, and AC) submit only samples of Cannabis Flower, and do not submit samples of Cannabis Concentrate. Among the last three licensees in the chart above (AA, AB, and AC) a total of 49 samples of Cannabis Flower have been submitted without a single fail among them.

Clearly, this is not random or coincidental. It is systematic. Pesticide prevalence is not uniform across the cannabis industry.

Failure Rates and Testing Volumes Over Time



In late Q2 of 2018, Confidence Analytics reduced the price of pesticide testing from $250 to $70. The reduction in price was the result of hundreds of hours of method optimization, a recognition that more samples would be submitted if the price were reduced, and a general desire among the staff of the laboratory to provide more access to pesticide testing to the 502 community.

The graph above demonstrates the effectiveness of that strategy toward increasing the number of pesticide sample submissions. The number of samples submitted to the laboratory for pesticide testing more than tripled between Q2 and Q3 of 2018. In this light, the graph displays the price-sensitivity of licensees, and supports the understanding that the cost of the test remains an important consideration for most licensees adopting the pesticide test.

In Q3 of 2018, roughly 7% of samples submitted to Confidence Analytics were tested for pesticides, compared to previous quarters where that number was less than 3%.